



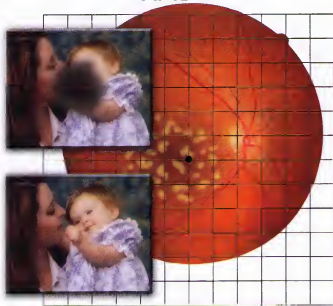
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MACULAR DEGENERATION

Age Related Macular Degeneration
AMD

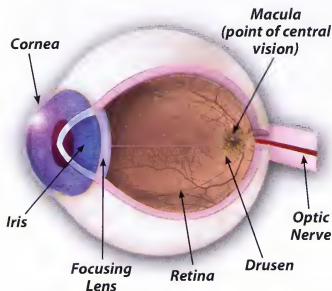


**A Deterioration of the Retina
Which Causes Poor Central Vision**

Macular degeneration (also called age related macular degeneration or AMD) is the leading cause of impaired reading or detailed vision. It is caused by the breakdown of the macula, the central portion of the retina. Although macular degeneration causes distortion of central and color vision, side vision is not affected.

What is the retina?

The retina is the thin layer of light-sensitive tissue which serves as the inner lining of the eye. When light enters the eye, it is focused by the cornea and the lens onto the retina. The retina then transforms the light images into electrical impulses which are sent to the brain through the optic nerve.



The retina transforms light images into electrical impulses which are sent to the brain via the optic nerve. Drusen (yellowish deposits in the retina) can be an indication of macular degeneration.

What is the macula?

The macula is a very small area of the retina which is responsible for central vision and color vision. The macula allows us to read, drive, and perform detailed work. Surrounding the macula is the peripheral retina which is responsible for side vision and night vision.

What causes macular degeneration?

Macular degeneration is most commonly a natural result of the aging process. With time, the retinal tissues break down, causing a loss of function of the macula. Smoking, obesity, high blood pressure, family history and poor diet are known to increase the risk of developing AMD.

90% of AMD patients only have early or dry AMD. However, about 10% of the cases develop into wet AMD where aging of the retina is compounded by leakage of the tiny blood vessels which nourish the retina. Growth of new, abnormal blood vessels in the scar tissue that forms from the leaking blood vessels occurs. The abnormal vessels, leak blood and fluid which destroy the macula and together with the dense scar tissue cause central vision to become blocked, distorted and blurred. Occasionally, macular degeneration is caused by injury, infection, or inflammation.

What are the symptoms of macular degeneration?

The most notable symptom of macular degeneration is blurry or distorted central vision. Difficulty in reading, doing close work, or driving may also be noticed. A person with macular degeneration may experience blurry words on a page, distortion of the center of

Macular degeneration is detected by a procedure called fluorescein angiography. It can be done to check for blood vessel leakage. A dye, which quickly travels through the eye, is injected into the patient's arm. Photographs of the blood vessels in the retina are then taken to determine the extent of damage. Other imaging techniques like optical coherence tomography (OCT) may also be used to detect macular degeneration or to monitor progression.

Macular degeneration may cause words in the center of a page to appear blurry.

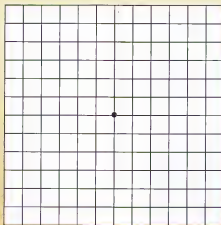
a scene, a dark or empty area in the center of vision, or the distortion of lines.

Macular degeneration may also cause a dimming of color vision. Fortunately, the disease does not cause total blindness, as side vision is not affected. Macular degeneration only affects central and color vision. However, if macular degeneration occurs in only one eye, the symptoms of the disease may not be noticed, as the "good" eye compensates for the "bad" eye.

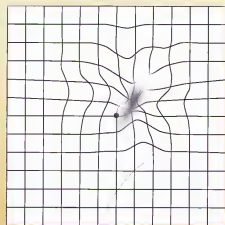
How is macular degeneration diagnosed?

A lighted instrument called an ophthalmoscope is used to examine the retina. The appearance, size and quantity of drusen may be an indication of AMD. In addition, some special tests may be administered. The Amsler Grid test, in which the patient looks at a page similar to graph paper, is used to detect blind spots or distortion of central vision. A color vision test will indicate damage to the macula

Normal



AMD



Amsler Grid: When a patient looks at the black dot in the center of the Amsler Grid with one eye closed, damaged areas of the retina may cause the appearance of faded spots or wavy lines.

if the patient cannot detect symbols or letters camouflaged in colored patterns.

If macular degeneration is detected, a procedure called fluorescein angiography may be done to check for blood vessel leakage. A dye, which quickly travels to the eye, is injected into the patient's arm. Photographs of the blood vessels in the retina are then taken to determine the extent of damage. Other imaging techniques like optical coherence tomography (OCT) can be used to aid in diagnosis or monitoring the progression of AMD.



OCT of Normal Macula

How is macular degeneration treated?

Unfortunately, there is no cure for macular degeneration. However, a healthy lifestyle can be important in reducing the risk of developing AMD. A healthy diet rich in green leafy vegetables and fish, supplemented

with vitamins high in specific antioxidants (A, C, E and beta-carotene with zinc), can significantly reduce the risk of advanced AMD and its associated vision loss.

Laser treatments and NEW medications can slow vision loss from AMD and in some cases improve sight.

Photo Dynamic Therapy (PDT) uses a light-activated drug that is injected into the bloodstream. Next, a laser beam, directed into the eye onto the affected area where the drug has been collected, activates the drug and destroys abnormal blood vessels. Other types of laser treatments can seal leaky blood vessels to reduce hemorrhaging and scarring that decrease central vision.



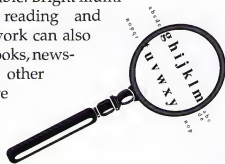
Distortion of central vision is a common symptom of macular degeneration. Laser treatment or Photo Dynamic Therapy (PDT) may help to prevent further vision loss.

Anti-VEGF Therapy: Recent research shows the presence of vascular endothelial growth factor type A (VEGF-A) stimulates the growth of blood vessels in patients with wet AMD. The presence of these new abnormal blood vessels impairs vision. New anti-VEGF-A medication regimens, like Lucentis, Macugen and Avastin, inhibit VEGF-A, reduce new vessel growth and result in improved vision.

Other research is providing treatments that include implantable devices to deliver a controlled release of a drug over an extended period of time.

Low vision aids

People who suffer from macular degeneration are able to compensate for some of their vision loss through the use of low vision aids. Many sophisticated magnifying devices, as well as spectacles and hand or stand magnifiers, are available. Bright illumination for reading and other close work can also be helpful. Books, newspapers, and other materials are available in large print.



Low vision aids assist many patients with macular degeneration in leading comfortable, normal lives with few interruptions of regular activities.

Prevention is the best medicine

Regular eye examinations are important in detecting macular degeneration, as the symptoms of the disease often go unnoticed. Early detection of macular degeneration may prevent further vision loss, since treatment is only effective when started early. Regular examinations are especially important for older adults and persons who have family members with a history of retinal problems.

If you are experiencing difficulty with central or color vision, or have other vision problems, you should obtain a complete eye examination.